The Training School Bulletin

NOVEMBER, 1960 Volume 57—Number 3

Report of 1960 Conference
The Training School

Reading Disabilities
Daly - Lee

Evaluating Work Potential
Tobias - Gorelick

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"for the practicing professions concerned with mental retardation"

the training school BULLETIN
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1. Articles of a technical nature, e. g., reports of research, discussion of problems in the field.
2. Non-technical articles of general interest, e. g., human interest stories of the mentally retarded, restatements of technical material for the layman.
3. Book reviews and news notes.
4. In special instances, republication of important articles having limited distribution.

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the training school BULLETIN

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Editorial

Specialization and Restrictions

We hear a great deal from persons specialized in various fields in our work with the mentally retarded and constant reference to the desirability and need for inter-disciplinary effort in solving the problems which are before us. With these we have no quarrel. However, we do want to reemphasize an old understanding.

All of us readily agree to the need of orienting our methods and techniques toward the child. This would mean that in the case of a particular child, knowing of his personal situation, a professional person dealing with him would be ready to pass beyond any narrow restrictions set up by acquired specialization in order to provide the child with the help he needed. This assumes the worker could overrun his own area with some competence.

Ordinarily this ability to extend one's self into a broader area in order to answer the needs of a situation grows with experience with that situation. New workers in a field are less able to do this. For them it seems logical to clearly define specialization restrictions and certainly this offers the protection of group participation in meeting a problem. Any blame for not solving it can hardly be laid at any individual's feet.

Yet, eternal group participation is by no means the most effective or efficient method of growth for the individual. Nor is the group forever present to assist the individaul. Hence, it is pertinent to suggest that in dealing with problems of people the new worker strive to gain as many experiences in an area as possible and as much insight as possible into methods used by everyone who aids in more successful solutions. And it will follow that in time he will free himself of some of the shackles of specialization and become more capable of understanding the total personality that stands before him pleading for help.

W. J.

Report of Conference

DEVELOPMENT OF PARENTAL AIDS FOR THE RETARDED IN LEISURE TIME AND WORK ACTIVITIES

(held September 26, 1960 and sponsored by The Training School at Vineland, New Jersey.)

PREFACE

On September 26, 1960, a Conference on Development of Parental Aids For The Retarded in Leisure Time and Work Activities was sponsored by and held on the main campus of The Training School at Vineland, New Jersey. More than 100 panelists, participants, and observers attended and took part.

The purpose of the Conference was derived from the fact that because most knowledge and techniques directly concerned with leisure and work activities for the mentally retarded stem from and are basically employed in an institutional environment, there was a need to explore and specify those existing activities which would be of direct use and benefit to the parent of the retarded child faced with a home and community setting. A need existed to originate new concepts, to provide the methods and techniques employed in setting those activities and concepts into use and sustaining them, and to point out problems and pitfalls in such areas.

The goal was to organize and produce for distribution to parents the philosophy of the value of leisure and occupational activities for the child at home and in the community; activities themselves and why they can be important to the child; general teaching methods; overall motivation for activities and attitudes; and the problems of which the parent must be aware in employing these activities and methods.

Five Panel Sessions were held. They included:

I. The Pre-School Child.
II. The Mildly Retarded Child of School Age.
III. The Moderately Retarded Child of School Age.
IV. The Mildly Retarded Young Adult.
V. The Moderately Retarded Young Adult.

The following pages contain brief summaries of each Panel Session in addition to the complete lecture delivered by George S. Stevenson, M.D., National and International Consultant, (Ret.) NAMH. A more detailed publication of the Conference proceedings and results will be published by The Training School in the near future.

Lecture:

"Some Basic Considerations In Helping The Family With The Retarded Child's Work And Play"

george s. stevenson

I DO NOT know of any better justification for the effort of this Conference to develop aids for parents than the evidence of the past. It is astonishing what some parents have been able to do for their children when they have wise counsel. Many, impelled by their feeling of duty toward their child have acquired a familiarity with the existing body of knowledge about mental retardation that outshines all but the top few of our professionals and they have exhibited remarkable wisdom in planning.

I think especially of one mother. This mother is wealthy but wealth is not the most important thing in her life. She has social position, but she is not a seeker of social status. To her, children are the great life value. One of her two sons is retarded, but she can see his needs clearly. She is not guilt ridden. She does not constantly review the past to discover what she did wrong and she does not need to serve herself through coddling him. She doesn't need to, for she has taken the trouble to inform herself about retardation. And so she was free to study the needs of her child independently of any need to free herself of the burden of blame. She visualized for him a life of satisfaction based upon his living within his talents; this meant planning. This meant preparation for a job that was within his capacity, but still challenging enough to his best potential to give him satisfaction.

Being a messenger boy for a small merchant exactly fitted his needs and capacities and this, with her help, he became. She also sensed that her very busy home life might not be to his liking but she knew also that some other arrangements might raise his feeling of being rejected. So she gave him the choice. Living in a simple family as a boarder was what he chose, although always free to choose the home of his parents, whom he still visited often. He thus achieved social satisfaction without any feeling of rejection. It was sound professional assistance to the parents and unusual mental health on their part that insured this happy outcome.

The emotional state of parents of retarded children constitutes a two-edged sword. On the positive side it prods the parents to seek more knowledge and assume leadership. On the negative side it blocks their ability to accept the child's limitation, and so interferes with early and realistic planning and help and often adds to the child's load of handicaps.

In dealing with this problem the professional person has the task of specifically identifying the life value by which the parent is guided. Is it shame (i.e.) his social status which he feels is jeopardized by having such a child? Is it guilt, (i.e.) the idea that something he has done is responsible? Is it frustration, (i.e.) the loss of hope of his ambitions for his offspring; a blocking of his high valuation of his family line? Unless these value orientations are identified efforts at communication will not reach the parent and the efforts of the professional person will be blocked. As a result, the professional may say that the parent is uncooperative and will excuse his failure instead of understanding it.

The lack of ability of the professional to fathom the sensitivities of the parent — to see that these vary from case to case, often neutralizes the effort to help the parent. When parents put the child's welfare above everything else in the world, above that of themselves and his siblings, it avails little to advise institutional placement out of justice to or for the benefit of anyone else than the child himself. The phrase, "I always tell a parent institutionalize the mongoloid", etc. reflects failure to tailor-make the advice and foreordains an undue amount of failure which the professional will excuse by saying the parent is bull-headed or is unco-operative. It is the professional person's responsibility to see "lack of cooperation" as a calculated part of the symptom picture and to have effective ways of forestalling it.

An article appeared a few months ago in a small British publication, "The Medical Officer", dealing with the discrepancy between potential and realization of potential in those of limited mental capacity. It attempted to explain why a person with sufficient brain to support more or less independent functioning failed to come up to his possibilities.

Three factors stood out as interferences: First of all, coddling; secondly, the failure to use and thereby develop whatever talents exist; and third, isolation. It is apparent that these are intertwined and that they exist because the parent is unable to deal dispassionately enough with the child to sense his needs; the parents' own concerns and anxieties get in the way. This does not mean that the parent is exceptionally stupid or neurotic, but that he is confronted with a tough situation and has only human resources at his control to deal with it. Looking at the parent in this light, the professional can see that the parental attitude resulting in coddling calls for professional help, not censure. Coddling appears on the surface to be overprotection of the child but more deeply it is protection of the parent, very likely a compensatory way of balancing the parent's discomfort about his own attitude toward the child.

One of the widely used pamphlets of the NAMH is entitled "Mental Health is . . . 1, 2, 3." Number One is the attitude of the person toward himself. Is he uncomfortable, uncertain, ashamed, or critical? If so, the

basis of his mental health is shaky. Number Two is the attitude toward other people. This is heavily influenced by his attitude toward himself. If he generally gets along well with others, we have evidence that his mental health is sound. Number Three has to do with his attitude toward the conditions of life with which he must deal. Here again his attitude toward himself is a basic determinant of his success. These are factors that influence the parent's attitude toward his retarded child. The potential of the parent for helping the child in the home must be rated by what goes on outside the home and what happened years ago, as well as today.

It is a short step from coddling to disuse and neglect of the child's potential. Exercising one's potential in a guided way calls for restraint pointed toward moving ahead. Both restraint and change are uncomfortable and are apt to be avoided by both parent and child. The alternative is trial and error. For the deficient child this may be dangerous since he may learn to side-step error too slowly to avoid disaster. At the same time, without guidance failure may come so often and so painfully as to discourage effort to use his potential.

In many respects normal children develop their potentialities by group activities with their age peers. They teach and challenge each other. They vary, of course, in their speed of learning and skill, but usually the laggards do not lag so far as to give up. The retarded lack this peer teaching and challenge and incentive to success. Even with his IQ peers he may not be among peers when it comes to specific abilities. As a foundation for the progressive development of the child's work and play abilities, he needs specially designed opportunities that will otherwise not come about of themselves, as they do with the normal where the probabilities of finding the right group are high and the differences between members of the group are within the range of adjustment.

It is obvious that isolation is simply another side of the coin from coddling and disuse of potential. A study of childhood isolation was made in Canada some years ago. To identify the isolated child, a sociometric test was used. In this test each child in the classroom selected two other children whom he would like to sit beside. About 5% of the children were selected by no one. These were the isolates. Individual studies of the isolates showed three types: 1. the child with severe mental deviation such as childhood schizophrenia, who had gotten past caring about his relations with others. 2. the child who for social, racial or other reasons was rejected. His isolation bothered him. He was being damaged by it but not as yet seriously. He could turn into the #1 group. 3. The child who deviated from the others because he had special talents and interests which could not be expressed in the group, at least not day by day. So he worked alone. Whenever, however, the group needed these talents in their group activities, they were called on. These were not a rejected group, in fact, they were highly respected. They did not consider themselves to be isolated and so were not damaged.

It is the second group that contains the retarded, at least at first. As the danger of isolation builds up, they pass into the first group. This is why isolation is the third force that causes them to function below their basic brain potential.

Isolation has been the subject of special attention by researchers in the past few years. In its extreme from, (e.g.) submersion experiments, it is known to cause marked deviation from normal thinking, feeling and action, in some cases producing symptoms found in mental illness. It causes trouble in lone night workers, in persons isolated by race prejudice, in persons, (e.g. migrants) placed in foreign situations where communication is impossible, and, in the solitary confinement of penal institutions. Little wonder that it is a serious experience for the retarded. In fact, many such persons are tagged with low IQ's due to social isolation.

Many years ago in the 1920's, a psychoanalyst, L. Pearce Clark, recognized this as a further retarding in the mentally deficient of the severest sort. He found that these children function below the level that might be expected of them and postulated that isolation might be the cause. He conducted experiments to establish richer human contact for this group and found that their behavior rose to a point close to their potential. He emphasized that affection is a vehicle on which effective human contacts ride and that the absence of affection results in partial isolation. He stresses the importance of this warmth of relationship as an essential for all teachers, not merely those of the retarded. This partial effect and group influence is probably related to the results of some more recent experiments in the placement of children for adoption. After estimating the intellectual potential of adoptive children, they placed them in homes of a higher level than the estimated potential. This was contrary to the matching principle generally followed. The result was that many of these children rose to the level of the adoptive parents.

A recent follow-up of a mentally deficient family that 40 years ago was reported as mentally deficient shows something for us to take to heart. I am not sure what it shows specifically, but it does reveal a higher potential than is usually credited the offspring of such a family. In the first generation, (the parents were both retarded by the then used criteria) only 55% or 5 of their 9 children were so rated. The grandchildren showed only 14% retarded but included one way up in the higher brackets of intelligence. The great-grandchildren have shown no retarded as yet. The parents were socially quite isolated and I wonder whether they were really deficient otherwise in the neurological sense. Isolation of parents due to exclusive preoccupation with the child reduces their potential too, and calls for broadening their lives. The same is true of institution personnel.

The mental ill health that comes from isolation, disuse and emotional disorganization are dependent in part upon failures of the process of

individual integration. The harmonization of all parts of human behavior, E.G. potential and activities, is essential to the fullest realization of potential. These parts must dovetail with each other rather than relating as square pegs in round holes. To aid this dovetailing, humans develop a culture (i.e.) a system of values that pervades and rules the individual's life and is harmonized with the society in which he lives. It is the function of the family and especially the parents to help in this cultural development. If the individaul is guided by conflicting values within himself or with society, tension and mental ill health result.

This does not preclude difference in values and roles, for society expects difference, even demands it. Some of us don't want to be ditch diggers — our achievement value orientation focused on the future blocks this, but we appreciate those who have a different orientation so that they can dig ditches and still be mentally healthy. It is when we cannot accept the orientations of others that we express our own ill health and contribute to that of others. Parents are often very upset if their children do not adopt the values that they hold dear. The son who aspires to art may find himself rejected by a hard-fisted business executive parent.

Our culture also includes a concept of our relation to others, our roles as parents, bosses, etc. There is no one universal right relation. In some parts of the world a father is expected to make the most of his social and easygoing contacts outside the home with other men. He reserves his parental role for infrequent expressions of his authority. When a son marries, he brings his wife into his parental home. But it is improper for him to talk to her before his parents. He is thus, as you see, early in his marriage, set on the track of following his father's footsteps of socializing outside. This looks wrong to us only if we are intolerant of difference.

Now I have purposely spoken as if different peoples have a customary way of behaving and that even among them there are those who vary somewhat from this rule. But it is not as simple as that. These customs are not necessarily a 24-hour a day, seven day a week, uniform behavior. Individuals also have their customary standards of what is important in life and what their place should be in relation to others. But they too, individually, vary in these respects. They may vary on weekends when, instead of being achieving, individualistic and future-minded as they are in business, they want to be present minded and group oriented — the group being the family or club. They leave the serious things to manana, or Monday. Others make these shifts according to the time of day or other circumstances.

These shifts are important parts of our living, they are behind the all work and no play aniom. They are behind the disillusionment of the all play and no work dissatisfaction of the retired. We don't know enough about the demands of the retarded in these respects. We don't know whether intelligence level, isolation, disuse and emotional disturbance create variations different from our own or how to discover these things for an individual

retarded person. We are fairly accepting of the principle of individual differences, so we can avoid stereotypes even if we cannot identify the alternative types. Recognizing this will help us fill in our gaps. This is, of course, very basic to any effort to help the retarded to work and play.

One way in which the parent can help the retarded child at home is to pay attention to the things that go on outside the home that nevertheless help shape his life. Associations of parents have shown marvelous strength in social action, but many individually have contributed little. What about the philosophy of the school system? Do they over-simplify their job by establishing cut-off points and reject deviant children? If so, do they make sure that there are adequate provisions for such children under other auspices? Or, more boardly, do they see the schools as the instrument of society to aid in the development of all children, adjusting the curriculum to deviant as well as more normal groups? The parent's day to day handling of the child will be different if the schools have a combined work and classroom program for certain children who would become drop-outs under the traditional curriculum.

A school — work program is a partnership of a local business which employs the child part-time and the school which prepares him for the job. A large portion of drop-outs today are not drop-ins for work. They can't get work. Philadelphia is one of the leaders in school-work provisions for older children.

Attention should be given by parents also to the recommendations of the 1960 White House Conference on Children. One section of these recommendations is focussed on handicapped children looking toward the fullest development of their residual potential. It looks toward keeping the retarded as much as possible in the normal stream of school and community services. It sees the need for more money, and more specifically, equipped personnel to do these things. Again and again, the recommendations urge increased counselling and guidance. It urges more facilities for slow learners and the emotionally disturbed and provision for drop-outs. Its urging of more day care services is especially applicable to the retarded.

I have tried in this rapid review to point out some of the things that you may well keep in mind in the group deliberations aimed at helping parents help their children. I am aware that the things I have said are not new. They are more of the nature of reminders than anything else. Whatever is done should be reviewed by some of the parents themselves in advance, and then pilot tested under a critical eye.

PANEL

I. THE PRE-SCHOOL CHILD

Members

VINCENTZ CIANCI, *Child Study Supervisor,* N. J. Dept. of Education.

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KURT GLASER, M.D., *Acting Director,* Mental Hygiene Clinic for Children, University Hospital, Baltimore.

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SEYMOUR RIGRODSKY, PH.D., *Chief of Speech-Hearing,* The Training School at Vineland. (Moderator)

Although the theme of this year's Training School Conference was the "Development of Parental Aids for the Retarded in Leisure Time and Work Activities", it was decided by the Conference planners to include a panel discussion on the Pre-School child. This Panel was instructed to direct its deliberations to the introduction and development of the retarded child to play activities. It was understood that play at this age presents the vehicle for development in almost every important area.

The Panel centered its initial discussion upon the emotional difficulties experienced by parents of retarded children. It was recognized that parents of a pre-school mentally retarded child will often require professional assistance: to help them understand their child, to help them work through their emotional problems, to receive information about retardation and to help plan for the future. Members of the Panel described their experiences with over-protective and rejecting parents. The effect of this type of parental reaction was to further reduce the potential of the child. Since the pre-school age is a period during which the foundations are laid for future learning and development, a healthy emotional environment must be provided.

The Panel recognized that children develop concepts about themselves and their environment through play activities. Some of the more obvious values of play that were discussed were: (a) aid in the development of language and motor skills; (b) development of play habits that should lead to good work habits; (c) anxiety reducing and a source of identification.

Toys often are thought of as an important part of play activity. The group suggested that toys for the retarded child need not be limited to commercial items. Parents should permit their children to play with com-

mon household items and provide opportunities for their children to assist them in daily routines. It was suggested that toys be selected at the interest level of the child, and that parents take an active part in the play situation.

In this discussion of the general development of the retarded child the Panel stressed that parents should be prepared for delayed and retarded motor, language, and social development. Parents should be prepared to identify readiness periods and have some understanding of normal development to assist them in directing the growth of their children. To achieve success the child will need a great deal of encouragement and special effort on the part of the parent. The parents should be urged to understand the role of repetition in training and to be prepared to expect and accept failures. The theme that underscores this period is intellectual and emotional understanding. The group agreed that if parents had this information it would tend to reduce unnecessary pressures and anxieties.

The Panel decided that for some retarded children a good nursery school could be of invaluable assistance. The greatest value of this type of program would be the social and group opportunities that are made available. In addition, a nursery school could provide the information and counselling services that parents need. The Panel suggested that public schools consider extending their services for the retarded to the nursery level.

S. Rigrodsky, Ph.D.

PANEL

II. THE MILDLY RETARDED CHILD OF SCHOOL AGE

Members

RAYMOND GROSS, *Director, Student Life and Welfare,* The Woods Schools.

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PETER J. FINLEY, *Division of Clinical Psychology,* The Training School at Vineland. (Moderator)

The problem of development of parental aids was treated from three aspects: self, family and community. Under each of these aspects specific activities, purposes and values of activities in general, and where applicable, instructional procedures and problems were discussed.

The keynote of the Panel was that the same activities available to normal children were also available to the mildly retarded child. Occasionally, exceptions and modifications of various activities may be necessary.

In the area of self aspect, the following purposes and values were paramount: personal security, development of self-concept, accomplishment and identification.

Purposes and values derived from participation in leisure activities with the family were found to be: family interaction, sense of acceptance and belonging, assuming responsibility and promotion of satisfaction for self and others.

Community-oriented activities foster development of interpersonal relations, stimulation of competitive spirit, possible development of special talents, gaining status, acceptable outlets for physical energies.

Prior to the planning of a program of leisure and work activities, there must be a development of parental attitudes based on the home background. The acquisition of knowledge of certain basic concepts of retardation is essential. Some general statements that may be considered as guiding principles and recommendations were presented. These are essential to the proper planning and operation of an activity and/or work schedule. They are:

1. Personal interaction between child and parent is an absolute necessity and in nearly all respects is more vital than the actual implementation.

2. Parents must be alert to the physical and mental readiness of the child for a specific activity.

3. The selection and approach to initiation of activities must be very different for the retardate with emotional and/or physical handicaps, and frequently a clinical case study may be necessary.

4. Any activity selected must be meaningful and have value for the participant.

5. Understanding, patience and encouragement are unqualifiably important.

6. Awareness of being different may become apparent to the retarded child. However, at this level counseling can be exercised in helping the child adjust to the attitudes he or she may encounter in the community and possibly his own home. Counseling of the family is also desirable.

7. Although activities may be similar for the normal and retarded child, caution in selecting the setting for a particular activity must be practiced. This is particularly true in community activity.

8. Group activities should include participation with the family, other normal children and retarded children, not one category.

Counseling and guidance should be sought by the parent about to embark on activity planning to reduce errors in selection, personal frustration and undesirable attitudes in the child. This assistance may be obtained in a number of ways:

1. Familiarity with available literature on this subject.

2. Mental health clinics or centers devoted to the interests of the retarded.

3. Through membership in parent-groups.

4. From institutions or training schools the child may have attended.

Concluding remarks were directed toward the need for making information such as was discussed in this Panel available to parents.

A comprehensive list of acceptable activities was complied.

Peter J. Finley

PANEL

III. THE MODERATELY RETARDED CHILD OF SCHOOL AGE

Members

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MRS. HARRY W. BASCH, *NJARC,* North Plainfield, N. J.

ANDREW T. SEMBER, *Supervisor of Child Life,* The Training School at Vineland. (Moderator)

The Panel agreed that the moderately retarded child would derive the normal benefits from activities, i.e., development of ego, a sense of accomplishment, contributing member of a group, and a sense of belonging. However, the moderately retarded school age child has some definite characteristics that must be recognized. Extreme patience and repetition in any learning situation would be a must for the trainer. The limitations of the child must be recognized and competition with siblings should be de-emphasized. Easier tasks should be presented first so that the child would develop a sense of accomplishment and more complex tasks which build on the basic fundamentals could be introduced eventually.

Every activity when presented, should be an activity which is trainer-trainee centered, with the trainer taking the initiative for the accomplishment. As the child develops a sense of proficiency for the activity, the parent or trainer could gradually delegate more and more responsibility for its completion to the child until the parent or trainer can be entirely divorced from the activity.

The child should be looked at as a person with a distinct personality and when possible, activities, for the sake of motivation when introduced, should be presented as a game or an interesting activity. Parents must realize that the creation of a learning situation within the home, especially for self help areas, is of vital importance. Good examples by the parents are an integral part of this teaching technique. As the child learns self help duties, he gradually becomes an integral part of the group. The Vineland Social Maturity Scale is a good tool to assist the parents in developing the progression of learning in self help areas.

In evaluating leisure activities that a child is capable of assimilating, the child's mental level, his coordination, and multiplicity of his problems should be considered. The environment of the child should also be surveyed. A child learns by activity and play, and a parent must realize that the child will behave as a child, not as an adult. Many retarded children lack ability to initiate play, and play must, out of necessity, be adult guided. This is especially true in the non-active types of recreation.

Children should have the experience of contributing to the maintenance of the home. With proper teaching sequence there are very few jobs around the home the retarded are unable to learn. The parent should realize that assignment of tasks should be within the child's limitations. Training should be with the parent at first until the child can perform the task, and praise should be forthcoming at satisfactory completion of each job. When the retarded contributes to the maintenance of the home, it enhances sibling relationships for the retarded and increases his self respect. In family recreation, parents should realize that the retarded often will not adapt to games and activities as we know them, but games and activities can easily be adapted to fit the retarded.

Community agencies have a definite part in the life of the moderately retarded child. Recreation commissions, Y.M.C.A.s, Y.W.C.A.s, scouts, church groups, teen canteens, etc., should be expected to make provisions for the inclusion of such children into their programs. In some cases where instruction is involved, this would entail special programs. In others, the moderately retarded could be included in normal groups.

Andrew T. Sember

PANEL

IV. THE MILDLY RETARDED YOUNG ADULT

Members

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MILES E. DRAKE, M.D., *Clinical Director,* Vineland (N. J.) State School.

JOHN H. JENNY, *Supervisor of Physical Education,* Wilmington (Del.) Public Schools.

CLIFFORD P. LOCKYER, *Superintendent,* The Training School at Vineland.

GEORGE S. BAROFF, PH.D., *Chief Clinical Psychologist,* The Training School at Vineland. (Moderator)

For purposes of discussion the lower limit of the age range for this group was set at sixteen because it represents a period when the educational focus may be expected to shift from academic to vocational, and when the individual may be asked to begin to make a meaningful contribution to the family. No upper age limit was set. Though mildly retarded individuals reflect wide variation in their degree of personal responsibility, the Panel confined itself to persons who still reside in the home and are fully dependent on their families for emotional support, guidance and supervision.

The emotional needs of the mildly retarded young adult are qualitatively not distinguishable from those of their non-handicapped peers though the nature of the handicap results in unusually intense needs for acceptance and encouragement. To take the large step from dependent to independent status requires, in part, parental encouragement of activities which will foster the maximum degree of independence compatible with the handicap.

The Panel suggested and discussed activities which could be productively pursued for their intrinsic benefits and in terms of their contribution to family and to community.

There was unanimous acclaim for swimming. In addition to some of the obvious physical, social and psychological advantages accruing to the swimmer, of particular interest was the opinion that this was a sport in which the retardate might achieve as much skill as the normal individual. Since the mildly retarded person may be keenly aware of his own inadequacy and of the emptiness of some of the praise he receives, the opportunity for mastery of a "normal" activity appears to be singularly beneficial. Another outdoor activity which was highly recommended was camping.

Family participation was deemed essential in recreational activities. The Panel cautioned against encouragement of interest in competitive recreation because defeat has such a high negative valence for this population.

Creative and collecting hobbies were considered highly desirable. Among the former, a variety of media was suggested including Italian Plasticine, copper foil, ceramics, and candles. One of the advantages of some of these media was that the finished product could be obtained very quickly — thus avoiding some of the difficulties associated with limited attention span. As with outdoor activities, family participation was seen as essential.

Chores were viewed as important activities for developing responsibility and a sense of meaningful contribution to the family. There was some difference of opinion regarding kitchen duties but all agreed on the importance of assuming responsibility for one's own room or possessions.

Among the community recreational facilities, particular attention was given to the Scouting program — especially Explorer troops. The non-competitive aspect of Explorer scouting was emphasized, as well as its attraction for the older adolescent and adult. Explorer programs were described as highly flexible and it was felt that the retardate could be comfortably integrated into units with non-handicapped persons.

The problems associated with integrated as compared with segregated facilities were touched on tangentially. They are obviously more complex in this group then in the more severely retarded but would be more profitably discussed by a differently constituted panel.

George S. Baroff, Ph.D.

PANEL

V. THE MODERATELY RETARDED YOUNG ADULT

Members

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The problem of how to help the parent plan and provide leisure and work activities for the retarded at home has posed many unsolved problems and difficulties for parents and professional workers alike. The purpose of this Panel was therefore aimed at shedding some light on this many-sided problem in terms of activities, methods, techniques, etc. In order to direct the thinking of the Panel to specific problems, the topics were arranged in terms of the self aspect, family aspect and communiy aspect. Sub-headings were to be in terms of specific activities, purpose, values and implementation.

It is impossible to discuss the many specific activities at this time due to space limitations. Therefore, this brief summary will be limited to some of the factors, pertinent to the general success of all activities. An important first factor or criterion is that parents understand the problem they are dealing with and their responsibility as parents to build a program for the child. Many times parents are unwilling or unable psychologically or emotionally to give the appropriate leeway necessary to the growth and development of the retarded child.

Routine and sequence in the development of an activity is vital to the child's success. Parents cannot wait for signs that a child wants to or is ready to do something. Parents must know their child and take the initative in providing stimulating experiences, they must make activities for the child. The parent must not think in terms of what the child cannot do but in terms of what he can do. The parent must make activities—try to give

them some kind of motivation. The activity may be as simple as picking up sticks and parents may have to repeat the directions or demonstrate many times. This process may take weeks but a habit or reaction pattern is gradually built up to a point where finally the child begins to do things. Helping the child to realize some sense of accomplishment is very important.

Regardless of specific activity, teaching procedures and techniques are the same and would include: A positive approach, gaining the child's attention, repetition, keeping to a routine, allowing plenty of time, not helping the child in order to get finished quickly, remembering that all work will be a slow process at best, demonstrating rather than telling, giving praise, being sure the habit is correctly established, breaking complex learnings into specific steps, trying to teach one step at a time, and using proper sequence. The more meaningful activities are, in terms of the "concrete" and the "here and now", the easier it will be for the child to learn and retain them.

Stress was placed upon the utilization of the many opportunities and activities that are available within the home rather than searching for activities that are more artificial, or busy work in nature. Areas of self care, home cleaning, kitchen activities, yard activities all should be utilized to some degree regardless of the child's level. The child's ability to "do" is often under or overestimated by parents. Parents must be alert to the child's capacity and abilities to avoid frustrating the child. Activities should meet with success, thereby motivating and stimulating further. The Panel agreed that it is important to remember that in many cases being useful is a pleasure to the child; he does not consider it work. Do not let the child be inactive to the point of boredom.

The moderately retarded young adult should not be kept away from the community but should learn to use community facilities. Parents must help them to mature and to become a part of community life. This can be facilitated greatly by helping retarded children to be as much like others as possible in outward behavior, manners, social niceties, etc. Give sufficient latitude early enough in life and the child can learn to do many things within the home and community. If parents over-protect or wait too long to expose the child to living it becomes too late to help the child develop his maximum potential.

Bernard F. Niehm

Reading Disabilities In A Group of M-R Children: Incidence and Treatment

william c. daly and richard h. lee

PHASE I

THE RECENT trend toward "total" treatment of the mentally retarded population in institutions has become considerably strong the past ten years. One broad area of interest has been the education of mentally retarded children and the rehabilitation of those with specific educational deficits. These include children with reading handicaps, youngsters who have a certain amount of reading potential, and who should be helped individually to realize this potential if it cannot be realized through ordinary means (French, 1949).

Though research in the field of reading disabilities related to the "normal" youngster is extensive, revealing an incidence of ten percent (Gates, 1947; Hegge, 1937), the same type research on mentally retarded children in an institutional population is meagre. However, it has been pointed out that recognition of reading disability in the mentally retarded as a group is important if our ultimate treatment-oriented objectives are to be achieved. (Hegge, 1937.)

On the treatment side, mentally retarded children with reading disabilities usually improve measurably when afforded individual or group remedial assistance. A study covering group treatment is reported in Phase II of this article. H. Paul Janes, who studied this aspect in special classes in the Camden Schools, concludes that the remedial reading work done in special classes was just as effective for these slow children, within their ability range, as was remedial reading work with children of normal intelligence (Janes, 1953). At Wayne County Training School appreciable reading gains were observed in children referred for individual remedial reading although they were referred only if considered capable of profiting from special instruction. (Voillemot, Keller, 1956.)

Hegge expressed the importance of remedying reading difficulties as part of a total rehabilitation program and concluded that in terms of special reading disability it must be differentiated from the condition of general mental and educational deficiency and seized upon as an approach in pre-

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venting social inadequacy and in rehabilitating the maladjusted (Hegge, 1937.)

Individual treatment of the mentally retarded for the correction of reading disability can act as a therapeutic measure also in terms of mental health and personality stability since the attention and direction offered by the teacher or remedial therapist during the remedial session goes a long way toward satisfying some very basic needs in these children. Aside from structural analysis, phonetics, comprehension skills and other elements of the reading development process, a pleasant, accepting exchange or interaction with an interested individual can be very rewarding emotionally and thereby help facilitate a more wholesome life adjustment.

Problem

This study investigates the incidence or extent of reading disabilities in a group of mentally retarded subjects, a segment of an institutionalized population. However, before attempting to determine the incidence of reading disability in any group of mentally retarded children, clarification between reading retardation and reading disability should be made. While reading retardation means a youngster's reading grade level falls below that found in the average youngster of the same chronological age, reading disability exists only when reading grade level falls below the mental age level of the child. (Hutt, Gibby, 1958). Regardless of the cause then, if a child reads at a level below his mental age he demonstrates a specific reading disability. (French, 1950).

In this investigation a comparison will be made between actual reading ability and the level at which the subject should be reading according to mental age.

Method

A study of seventy-seven mentally retarded subjects with mental ages ranging from 6-1 to 12-7 and chronological ages ranging from 10-2 to 18-6 was formulated. The I. Q. range of these subjects was 45 to 86 inclusive. Composing the group were 46 females and 31 males, while the mean I. Q. of the entire sampling was 61.

The subjects were examined with the Wechsler Intelligence Scale for Children (C.A. below 16-0) or the Wechsler Bellevue Intelligence Scale, Form I, (C.A. above 16-0) depending on appropriateness to chronological age. From the full scale intelligence quotient obtained, mental age equivalents were derived

which in turn were used to determine expected or potential reading level. For instance, a 12 year old youngster with a mental age of 8 would have the potential of reading optimally on a level approximately equal to the average third grader or 8 year old. His expected reading level therefore would be third grade. Each child was given the Durrell Analysis of Reading Difficulty, an instrument administered to determine the grade level on which each child was reading. Reading speed was used as the basis for this, but no effort was made to study specific reading difficulties such as sight vocabulary, eye-voice span, comprehension, sounds and so forth.

Mental age reading grade expectancies were compared with actual reading grade levels in an effort to ascertain disability. The criterion for disability was developed in the following way.

One list of reading grade levels on the basis of speed and one list of reading grade levels on the basis of mental age were constructed using the grade and age notations on the profile chart of the Durrell Analysis of Reading Difficulty. According to this chart, each reading grade level is divided into three levels, low, middle and high. The writers assigned one numerical value to each level, and by allowing the actual reading level of a child to equal zero and counting each unit up to the expected reading grade level founded on mental age, the number of units between the two levels was used as the index to determine the presence of disability. If the units exceeded one which approximates a six months differential, a disability was considered evident.

An example should clarify the above description. A subject with a speed reading grade level of L-2 and a mental age reading grade level of L-3 (L-2=0, M-2=1, H-2=2, L-3=3) has a unit differential of three, which satisfies the criterion for reading disability as set forth herein.

Results and Discussion

The data in this study showed incidence of reading disability, as defined earlier, in a group of seventy-seven mentally retarded male and female subjects to be 38% (Table 1). Almost one third of the female subjects and slightly less than one half the male members exhibited reading disabilities. Eighteen percent more of the males revealed a disability than females.

Table 1 (Phase I)

	N	N with dis	N without dis	% of dis
Female	46	14	32	30
Male	31	15	16	48
Total	77	29	48	38

This evidence suggested the need for some form of constructive action on the part of the staff. Since the study showed that the frequency of reading disabilities of the mentally retarded in the education program in this institution was considerably greater than a group of so-called "normal" children in the public schools and since in terms of our goals all possible means toward removing deficiencies should be tried, it was decided a reading program of re-training, of developmental design, emphasizing basic reading skills as well as what may be designated as the functional aspects of the reading process, should be established within the framework of institutional programming to achieve the long range goals of optimal habilitation and rehabilitation of these retarded children.

Summary

This study explored the incidence of reading disability in a group of seventy-seven mentally retarded male and female institutionalized children between ages of 10-2 and 18-6 inclusive. Speed reading grade level based on results of the Durrell Analysis of Reading Difficulty was compared with mental age reading grade level based on the administration of the Wechsler Intelligence Scale for Children and the Wechsler Bellevue Intelligence Scale, Form I, depending on life age.

Briefly, the conclusions were as follows:

1. Reading ability compatible with or exceeding mental age reading grade level was found in 62% of the cases examined.
2. A reading disability was found to exist in 38% of the total number examined.
3. Close to one-third (30%) of the female group revealed a reading disability.
4. Close to one-half (48%) of the male group revealed a reading disability.

The foregoing results spelled out clearly the dire need for some form of program of group developmental reading design.

PHASE II

Since no reading specialists were available, the utilization of present teaching staff in a program of developmental reading was the only practical alternative. Merely for the purpose of programming, all children in the education program were grouped homogeneously according to appropriate reading levels for one hour each day during which time they received exclusively reading instructions and stimulation. Each teacher selected a level compatible with her background, interests and needs, and was supplied with material appropriate to that level. This helped reduce the teacher and pupil frustration inherent in any attempt to teach reading to a group composed of youngsters reading on a wide assortment of levels. The grouping, of

course, did not eliminate the problem of varied mental capacities and interest diversities which, in themselves, foretell the need for individualized instruction by the teacher. But at least the children were grouped by reading grade level during their hour of intensified reading, making for a teaching process more pallatable and comfortable according to teacher predictions, and facilitating the development of the pupils' reading skills.

The authors had no way, however, of learning the effectiveness of homogeneity on the oral reading speed of the youngsters in the program. Therefore, in order to determine the justifiability of special reading stimulation of mentally retarded children under these conditions, an experimental study in conjunction with the special reading program was initiated, using the control factor and the test-retest technique. It was hoped the results would give reason to continue, modify or disband the program of homogeneous grouping, or to explore further other schemata for reading improvement.

Problem

In light of the first phase the authors were interested in ascertaining whether there might be any significant difference in reading level with speed as a determinant between an experimental group of retardates *homogeneous* in terms of reading grade level, using regular classroom procedures as well as special concentrated methods, and an equated control group *heterogeneous* in terms of reading grade levels, using regular classroom procedures as well as special concentrated methods.

Method

The subjects in this study were 26 mentally retarded youngsters of Caucasion extraction with mental ages ranging from 6-3 through 10-10. They were divided equally into experimental and control groups (4 male and 9 female), and matched for M.A., C.A., sex and reading grade levels. All were reading within the first and fourth grade levels; M.A.s covered a 12 month range; and C.A.s were within an 18 month range. In addition to the regular school program both the experimental and control groups, received special one hour reading instruction and stimulation, the former with other children of the same reading speed level, the latter with other children of different reading levels. All children in the education program were reached and consequently none of the teachers knew what youngsters were involved in the study. This eliminated the possibility of special effort or bias that may have otherwise been demonstrated by a teacher or teachers. However, it was not possible to eradicate speculation or presumptions on the part of the teaching staff. Except for brief pre-study orientation and discussion in an effort to obtain cooperation and to loosely structure the reading program in terms of the length of the special reading class and the specific time of the day when the meeting of this class would be most convenient, the teachers were unfamiliar with the study design itself, the

Table 1 (Phase II)

Raw Scores and Differences between Before and After Training.

EXPERIMENTAL						CONTROL					
Before Training			After Training			Before Training			After Training		
S s	Read level	Rating	Read level	Rating	Diff. Score	S s	Read level	Rating	Read level	Rating	Diff. Score
1	L-1	1	H-1	3	2	1	L-1	1	M-1	2	1
2	L-1	1	L-1	1	0	2	L-1	1	L-1	1	0
3	L-1	1	L-1	1	0	3	L-1	1	H-1	3	2
4	M-1	2	H-1	3	1	4	M-1	2	H-2	6	4
5	M-2	3	H-2	4	1	5	M-2	3	H-2	4	1
6	M-2	3	L-3	5	2	6	M-2	3	M-2	3	0
7	M-2	3	H-2	4	1	7	M-2	3	M-2	3	0
8	L-3	4	M-3	5	1	8	L-3	4	L-3	4	0
9	L-3	4	L-3	4	0	9	L-3	4	L-3	4	0
10	M-3	5	H-3	6	1	10	M-3	5	H-3	6	1
11	M-4	6	M-4	6	0	11	M-4	6	M-4	6	0
12	H-4	7	L-5	8	1	12	H-4	7	H-4	7	0
13	H-4	7	H-4	7	0	13	H-4	7	H-4	7	0

number of youngsters participating and their identity, and the planned duration of the experiment.

During the five month period all subjects received 60 hours of concentrated or intensified reading stimulation. The subjects in the experimental and control groups were reevaluated at the end of the experiment under like conditions with the Durrell Analysis of Reading Difficulty for the purpose of determining reading speed change.

The reading speed levels by grade (L-1, M-1, H-1, L-2, etc.) were rated from lowest to highest on the basis of results of the initial evaluation. The same procedure was used after the second evaluation at the end of the 60 hours. The differences were tabulated (Table 1) and ranked.

Results and Discussion

This data was analyzed using the Mann-Whitney U Test to determine whether a homogeneous reading group of retardates would show a greater reading gain than a heterogeneous reading group of retardates under the conditions described. Comparisons between the groups showed no statistically significant difference (Table 2). Therefore, it would appear that this kind of special program in reading has no significant influence on the rate of reading of mentally retarded subjects. On the other hand, teacher impressions were positive from the standpoint of the relative simplicity and ease involved in the process of teaching reading to a group of youngsters reading at a common level.

Table 2 (Phase II)

Ranking of Subjects

EXPERIMENTAL		CONTROL	
Diff. Score	Rank	Diff. Score	Rank
2	24	4	26
2	24	2	24
1	18	1	18
1	18	1	18
1	18	1	18
1	18	0	7
1	18	0	7
1	18	0	7
0	7	0	7
0	7	0	7
0	7	0	7
0	7	0	7
0	7	0	7
	R1=191		R2=160

U=69

The authors felt that a number of combined weaknesses in the study may have accounted for the absence of a significant increase. The number in the groups under scrutiny was small; there existed too much diversification and flexibility in relation to the kinds of teaching techniques utilized in class, characteristics which should have been brought under more careful control; seven children were quarantined because of measles, coincidentally at the end of the 60 hours of reading, and therefore were reevaluated two weeks after the original nineteen were reevaluated.

While these limitations may have influenced final results, the second in particular suggests modifications for future studies and possible pitfalls to be avoided when shaping future research designs related to the problem of reading. Some areas of inquiry that crystallized in the minds of the authors during and after the experiment were the effect of such a program on the comprehension of mental retardates; the comparative effect of such a program on retarded youngsters with reading disabilities and retarded youngsters with no reading disabilities; and the effects of different kinds of teaching or methodology on reading progress of mentally retarded subjects.

Summary

The second phase of this article reported a reading experiment with mentally retarded youngsters to determine the efficacy of homogeneity of reading groups, approaching the problem from the aspect of reading speed changes. Sixty hours of special concentrated reading were included in the regular academic program of a school for the mentally retarded, and two groups, one mixed and one homogeneous, were evaluated before and after with the Durrell Analysis of Reading Difficulty to determine reading speed changes. Differences were not found to be statistically significant which infers the necessity for a different type of reading stimulation, perhaps with more controls over teaching methods, than that described herein if one is interested in helping mentally retarded individuals read at an optimum speed in keeping with individual capacities. It would seem that a more consistent and structured program at the classroom level where each teacher would be using similar techniques to the same degree, instead of a potpourri of methods, would increase the reliability of such a study and perhaps show evidence to the contrary of that reported in this article.

In any event, it is hoped that the interest this article may have generated in others will provide the momentum to pursue more comprehensive studies in reading which may profitably provide answers to the problem of the best techniques or pattern of techniques to be used with retardates on a group basis, especially with those complicated by reading disabilities. In the absence of remedial reading specialists to work with youngsters individually, creation of institutional programs of this nature and systematically testing them should eventually lead to an ideologically and practicably sound program model in terms of the mentally retarded child.

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The Effectiveness of the Purdue Pegboard in Evaluating Work Potential of Retarded Adults[1]

jack tobias and jack gorelick

MANY examiners who have experienced with batteries of psychological instruments in the testing of the retarded and other handicapped groups have included one or more measures of "dexterity" or "mechanical aptitude". Frequently such tests are specifically requested by agencies responsible for vocational rehabilitation. Despite the relative ease of administration and scoring and the availability of normative data, there is generally a quick disillusionment over the utility of "dexterity tests". A major proportion of retarded adults fall below first percentile rank and those who can be scaled in comparison with a normal population—usually some industrial group—cluster at the lowest levels. The tests seem to confirm well-known facts, viz, the testee is in a poor competitive position for a job when compared to normal workers. Since equivalent information is readily available from other instruments in the test battery, the "dexterity" test seems redundant.

Additional doubts about their utility are raised by the theoretical discussions as to what such tests measure. There seems to be substantial agreement that there is more than one kind of "dexterity" and that tests of this factor must be highly specific to a criterion before they reach acceptable levels of validity. Fine finger dexterity may have little relationship to tasks in which gross muscle movements are required, etc.

The growth of the sheltered workshop as a community resource for the employment of retarded adults gives the problem a new relevance and emphasis. It is an increasingly acceptable idea that useful occupations at a level below that of competitive employment is more realistic for large numbers of those who cannot meet industrial standards. The selection of those to be trained for specific skills and job assignments based on appraisals of ability, has become a real problem to both workshops and institutions who endeaver to utilize the vocational aptitudes of the retarded in a manner that will provide profitable and satisfying activity.

The AHRC Sheltered Workshop and Training Center in New York City tried to determine the usefulness of the Purdue Pegboard, a commonly

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used measure of manipulative dexterity, as a prognostic device for retarded workers residing in the community. A number of specific questions were investigated.

1. How do retarded adults compare with normals in a measure of dexterity that is presumably uncorrelated with intelligence?
2. Can the Purdue Pegboard discriminate between different levels of dexterity below those of the standardization population of normals?
3. Is there a relationship between dexterity and intelligence within the retarded range?
4. Are the dexterity scores more closely related to some measures of IQ than to others?
5. How valid a predictor of the vocational success of a retarded population is the Purdue Pegboard?
6. How does the Purdue Pegboard compare with more commonly used measures in predicting vocational efficiency?

A series of related studies were conducted on a Workshop population of retarded adults over the age of 17 and ranging through all levels of retardation above an IQ of 30.

Comparison with Normals

The Purdue Pegboard was administered to 81 retarded adults referred to the Workshop because of their inability to make a vocational ad-

Table 1

Three Trial Totals on Purdue Subtests

	Male		
Subtest	Retarded	1st%ile Industrial Applicants	Mean % iles of Retarded
Right Hand	38.6	34	6
Left Hand	38.2	29	10
Both Hands	28.5	24	6
Right-Left-Both	103.9	103	1
Assembly	61.9	62	1
	Female		
Subtest	Retarded	1st%ile Industrial Applicants	Mean % iles of Retarded
Right Hand	39.8	42	-1
Left Hand	39.3	37	2
Both Hands	30.9	29	1.5
Right-Left-Both	109.7	114	-1
Assembly	59.6	68	-1

N = 81

justment in the community. The directions in the Examiner Manual for the Purdue Pegboard for administration and scoring were followed without essential modifications. It was occasionally necessary to repeat instructions or to demonstrate a required procedure on the Assembly Subtest. Mean scores on each of the subtests were computed for the retarded population. Table 1 summarizes these scores, compares them with the lowest percentile of the standardization group of industrial applicants, and gives the equivalent percentile rank reached by the mean of the retarded group.

It is evident that on most of the measures provided by the Purdue Pegboard the average retarded adult is barely able to equal the scores of the lowest percentile of the standardization group. The best comparative performance of the retarded was in work with the left hand alone.

Additional comparisons of means were computed on two of the subtests considered most significant. Table 2 substantiates the sharp discrepancy between the average industrial worker and the average retarded worker on this measure of dexterity.

Table 2

Comparison of Purdue Scores For Retarded and Normal Adults

	Retarded Male	Normal Male	Retarded Female	Normal Female
Mean R-L-B	34	43.6	34.8	47.5
Mean Assembly	19	33.1	18.6	36.7

Intercorrelations of Subtests

At least two previous studies with the Purdue (Tiffin, Asher, 1948; Strange, Sartain, 1948) have included figures resulting from intercorrelations of the subtests with each other. This procedure was repeated with retarded adult subjects on the two subtests that appeared to offer the most significant scores, the R-L-B and Assembly. Table 3 presents the comparative data of the three studies.

Table 3

Intercorrelations of Three Trial Scores Between R-L-B and Assembly

Subjects	N	r
College Students	434	.58
Veterans	447	.53
Retarded Adults	88	.82

It seemed hypothetically warranted to expect that scores of retarded subjects would decline with increasing complexity of the task. Since the Assembly subtest requires more than merely manipulative skills it seemed likely that defectives' scores on Assembly would be as much influenced by intelligence as by dexterity. It was expected that correlations between Assembly and the less intellectually demanding subtests would be lower with retardates than the equivalent relationship found with normal subjects. Table 3 demonstrates an opposite trend. The scores of retarded adults on these subtests are more closely correlated than those of college students or veterans.

A possible explanation for this finding is that intellectual level is an important factor on even the simpler subtests of the Purdue and that IQ is a relevant influence on all sections of the Pegboard.

Effect of Practice

The instructions for administering the Purdue Pegboard suggest three trials on each of the subtests that constitute the scale. The effect of practice between first and third trials was summarized in the Examiner Manual for the 434 college students who formed part of the standardization population. Means and Differences between Means were published and offer a basis for comparison with retarded adults of roughly equivalent age.

Table 4

Effect of Practice Between First and Third Trials

	Retarded			
	Trial 1	Trial 3	Difference	% Gain
R-L-B	34.3	36.5	2.2	6.4
Assembly	18.8	21.2	2.4	12.8
	Students			
	Trial 1	Trial 3	Difference	% Gain
R-L-B	46.9	50.7	3.8	8.1
Assembly	39.6	44.7	5.0	12.6

The figures in Table 4 indicate that both groups demonstrate a moderate improvement with practice. Although the absolute improvement of the college students is larger than that of retardates, the proportion of increase appears approximately equal for both groups. The rate of improvement does not seem to be related to intellectual level.

A check of the significance of the difference between the means of the first and third trials of 89 retarded subjects revealed a "t" of 7.1. Although the improvement with practice is not a large one the results could have occurred by chance in less than one case in a thousand.

Dexterity at Different Levels of Retardation

A study of Cantor and Stacey (1951) investigated the hypothesis that there was no difference in dexterity between various IQ levels among defectives. With their groups of adolescent, institutionalized males they found no differences between those in the 60 to 69 IQ range and those in the 70-82 range. However, these two groups were significantly better than those in the 42 to 59 IQ range. The authors concluded that an IQ of 60 seemed to mark the level at which it could be expected to find a marked inability to perform tasks involving dexterity.

A partial replication of the above study was undertaken with 90 retarded adults who were divided into three groups on the basis of WAIS IQ scores. A few subjects at the lower end were tested with the Stanford-Binet. Group A consisted of 23 subjects with IQ's between 30 and 49. Group B had 41 subjects with IQ's between 50 and 64. Group C, 26 subjects, had IQ's between 65 and 80. The three groups were compared on their combined scores on three trials of Right-Left-Both and the Assembly subtests.

Table 5

Differences in Purdue Scores at Three Levels of Retardation (Combined Scores of Three Trials)

Group	IQ	N	Mean R-L-B	Sigma	Mean Assembly	Sigma
A	30-49	23	86.4	13.3	41.2	8.8
B	50-64	41	107.2	17.9	57.4	16.1
C	65-80	26	121.7	14.5	78.0	14.9
Indust. Applic.	All Levels	865	135.	Unknown	104.	Unknown

(Standard Deviations for the industrial applicants are not provided in the test manual)

The systematic increase of Purdue scores with increasing intelligence is apparent from Table 5; "t" tests to check the significance of the difference between means were computed with the results shown in Table 6.

Table 6

Difference between Means

	t
Group A and Group B (R-L-B)	9.5
Group A and Group B (Assembly)	7.8
Group B and Group C (R-L-B)	6.0
Group B and Group C (Assembly)	8.8

These differences are all significant at better than the .001 level of confidence.

The unavailability of necessary data on the standardization group makes an equivalent computation impossible but it seems probable, from an inspection of the mean scores, that there would be a significant difference in performance between the highest levels of a retarded population and the average industrial applicant.

Of the retarded population investigated in this study, no one in Group A reached the mean of industrial applicants on either of the subtests. Eight percent of Group B achieved the industrial mean on R-L-B, but none on Assembly. In Group C, which included retardates in the "borderline" category, 19% reached the industrial mean on R-L-B and 8% on the Assembly subtest.

The results of the Cantor and Stacey study were not confirmed by this investigation. The available data indicate that dexterity, as measured by the Purdue Pegboard, is closely related to level of intelligence within the ranges of retardation. No group of retarded adults can equal the dexterity of the average industrial applicant.

Relationship between Dexterity and Intelligence

A more rigorous analysis of the relationship between Purdue Scores and IQ was attempted by computing correlations. Seventy-three of the Subjects involved in the previous investigation fell in the intelligence range measured by the Wechsler Adult Intelligence Scale. IQ's for the group ranged from 35 to 78 with a mean of 63 and a standard deviation of 10.6. The correlation coefficients are given in Table 7.

Table 7

Correlations Between Dexterity and Intelligence

	R-L-B	Assembly
WAIS F.S. IQ	.563	.666
WAIS Performance	.567	.730
WAIS Verbal	.340	.427

All the coefficients are significant at better than an .01 level.

It seems evident from the results that there is a substantial relationship, for this population, between intellectual functioning and manipulative dexterity. The factors subsumed by Wechsler in the Verbal Section of the WAIS are significantly less valid as predictors of dexerity than are those included in the Performance Section of the WAIS. The figures in Table 5 also confirm an impression that appeared evident on the basis of logical deduction. As the Purdue tests increase in complexity there is a closer relationship with intelligence. The requirements of the Assembly Subtest involve not only the coordinated use of both hands but the sequential placement of four discrete units. Lower level retardates have considerable diffi-

culty in following the test requirements. The correlation figure of .73 between the WAIS Performance Score and the Purdue Assembly Test suggests that both instruments are measuring a highly similar factor.

Previous studies conducted in the Workshop (Tobias, 1960; Tobias, Gorelick, 1960) have demonstrated that the Goodenough Draw-A-Man Test was also highly correlated not only with the WAIS Performance Score but with achievement on standardized work samples. A product-moment correlation between Goodenough raw scores and the scores on the Purdue Right-Left-Both was computed for 84 retarded clients of the Sheltered Workshop. An r of .46, significant at the .01 level, was found. When compared with the findings outlined in Table 7 it appears that the Goodenough Test is a superior predictor of dexterity than the WAIS Verbal Score but is not as effective as either the Full Scale IQ or the Performance Score.

Validity of the Purdue Pegboard for Retarded Adults

The Manual for the Purdue Pegboard advises great caution in estimating the validity of the test. Since motor skills may be quite specific to some tasks and not to others, the validity of the Pegboard is likely to vary on different work assignments. This generalization was tested on a number of bench operations that are representative of a whole category of work available to workshops for the retarded.

A. Ball-Point Pen Assembly

One of the subcontract jobs received at the Workshop required the assembly of six units to form a retractible ball-point pen. The six parts varied in size from small springs and plungers to a five inch barrel. The parts were placed in individual metal pans from which the trainees took what they needed to complete each pen. Individual instruction and a substantial practice period was permitted until each trainee had mastered the entire operation to a commercially acceptable criterion. Accurate records on productivity were then kept for 53 Workshop trainees who constituted most of the current population. An hourly average was computed based on approximately 15 hours of production, spread over a number of days. A product-moment correlation was then computed with two of the Purdue subtests. The range of average completed units per hour varied from 25 to 138. The r between production and the Purdue R-L-B score was .788. The r between production and the Purdue Assembly score was slightly lower, .678.

The Purdue Pegboard is a highly valid instrument for measuring the productivity of retarded individuals on a small-parts assembly operation.

B. Wire-Clamp Assembly

Accurate production records based on four hours of work were available for 41 Workshop clients. The job required the assembly of four metal parts to form a wire-clamp. A U-bolt, threaded at both ends, supported a metal saddle that was held in place by two identical nuts which were tightened by hand. The method of instruction, the criterion of learning and the arrangement of parts were all similar to that of the Pen Assembly task. A similar correlation was computed and an r of .748 between average hourly rate and score on Purdue R-L-B was found. The correlation coefficient is strikingly similar to that on Pen Assembly and attests to the high validity of the Pegboard as a predictor of productivity on this kind of work.

An equivalent correlation between this task and Full Scale IQ showed a significant, but much lower, relationship. The r between IQ and average hourly rate of production on wire-clamps was only .44. The Purdue was a more valid predictor of efficiency on this task than was the IQ.

C. Evaluation Tests and the Purdue Pegboard

As part of the Workshop procedure in evaluating new trainees a series of work samples has been standardized on a retarded population. A set of scores based on decile ratings of productivity on varied tasks has been established and a ottal additive score is possible (Tobias, 1960).

The Evaluation Score has been found to be a good indicator of general efficiency on a variety of bench operations.

Forty-seven trainees had been scored on both the Evaluation Tests and the Purdue Pegboard. The two sets of scores were correlated and an r of .708 was found. The equivalent correlation between these tasks and the Full Scale WAIS IQ is substantially lower, .43. The implication of the Wire-Clamp investigation, that the Purdue is a highly valid test for such purposes and superior to the IQ as a predictor, was confirmed by the correlations achieved with the Evaluation Test Scores.

The three investigations of validity reported above involved adults at varying levels of retardation. It was of some interest to observe whether the Purdue would be equally valid in discriminating work efficiency in a more restricted range of retardation. Twenty-five Workshop trainees below "educable" levels were available as subjects. Their IQ's ranged from 30 to 50. They were assigned to a disassembly task for ten hours of production work. To avoid fatigue and boredom the task was permitted for no longer than a two-hour block of time on any one day. The job was a salvage operation requiring the separation of a wing-nut from a threaded bolt and a metal washer. The separated parts were placed in trays and the number of

disassembled units was counted after each block of time. Hourly averages were computed for each of the participants and ranged from 150 to 450 units per person.

A product-moment correlation between the Purdue R-L-B Score and the hourly average of disassembled screws was made. The correlation coefficient is .539 and is statistically significant at the .01 level. It appears evident that even within a restricted range of retardation, the Purdue Test may be used as a valid indicator of work productivity.

D. Earnings and the Purdue Pegboard

The wages of the retarded workers are computed individually on the basis of the number of units produced. The typical procedure in estimating rates is to determine how many items can be completed by a normal industrial worker in one hour and to then establish a piece rate equivalent to industrial standards. Since most jobs are of relatively brief duration the retarded trainees have the opportunity for working on a variety of different projects in the course of a month. Although there is some fluctuation in the weekly earnings of each individual, this variability tends to be smoothed over a lengthy period of time. Most trainees assume a relatively stable position in comparison with their peers.

The average hourly earnings for a four week period was computed for 68 trainees and was then correlated with their R-L-B score on the Purdue. An r of .64 was found, significant at better than an.01 level.

A partial list of the actual jobs on which the earnings were computed include rubber stamping of textile hangtags; insertion of elastic laces in merchandise display cards; sorting of metal addressograph plates in numerical sequence; packaging typing paper; adhering labels to round plastic discs; counting and packaging transparent sheet protectors in plastic bags; assembling a four part emery grinding wheel to be used with an electric drill.

Each of these job operations required a variety of movements and skills that appear objectively different from those used on the Pegboard.

Table 8

Correlations between Purdue Pegboard and Criterion Tasks

	N	r with Purdue
Ball Point Pen Assembly	53	.79 (R-L-B)
Ball Point Pen Assembly	53	.68 (Ass.)
Wire Clamp Assembly	41	.75 (R-L-B)
Evaluation Tests	47	.71 (R-L-B)
Average Hourly Earnings	68	.64 (R-L-B)
Wing-Nut Disassembly (Low IQ)	25	.54 (R-L-B)

All coefficients of correlation are significant at better than an .01 level.

The impressively high correlation between the Purdue score and average hourly earnings on this type of factory activity is additional confirmation of the validity of the Purdue Pegboard when it is used as a prognostic device for determining the productive capacity of retarded workers.

Summary and Discussion

A series of related studies was conducted with the population of the AHRC Sheltered Workshop and Training Center to investigate the utility of the Purdue Pegboard in the evaluation of retarded adults. A summary of the results indicate that:

1. Retarded adults at all levels are significantly inferior to average industrial applicants in manipulative dexterity.
2. There are clear differences in manipulative dexterity between groups of adults who score at different levels of retardation.
3. There is a significant relationship between IQ and Purdue Pegboard Test Scores. This relationship becomes closer as the Purdue subtests becomes increasingly complex.
4. The Purdue Pegboard is most highly related to the non-verbal subtests of the Wechsler Scale and both instruments appear to be measuring a very similar factor. To a lesser extent this relationship holds true on another non-verbal measure of intelligence, the Goodenough Draw-A-Man Test. Measurements of verbal comprehension or verbal intelligence are least valid as predictors of dexterity or productivity on actual job assignments.
5. The Purdue Pegboard appears to be a more effective predictor of the productive efficiency of the retarded than it is of normals. Whereas tests of dexterity for normals must be fairly specific to a criterion task before they reach acceptable levels of validity, the correlation coefficients between the Purdue Pegboard and a variety of production tasks were impressively high.
6. Wherever an equivalent correlation with IQ was computed, the Purdue appeared to be a superior instrument in predicting productivity on the type of work available at the Workshop.

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